

AN EXPLORATORY ANALYSIS OF THE MERITS AND LIMITS OF ENVIRONMENTAL VALUATION FOR ENVIRONMENTAL RISK ASSESSMENT IN THE FRAMEWORK OF RADIATION PROTECTION

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This poster presents the work conducted within a project to assess the environmental exposure and associated risk to non-human biota from liquid discharges from the Belgian Nuclear Power Plants (NPPs) (sponsored by Electrabel (GDF-SUEZ)). Within this framework, it was also asked to attribute a monetary value to the radiological impact on the environment. We distinguished three research questions to answer this call. Firstly, what ecosystem services are provided in the potentially affected areas and how could they be damaged by the NPP liquid discharges? The main challenges in answering this question lay in the fact that ecosystems and their services are characterized by enormous dynamic complexity in which causal relationships are often subject to scientific uncertainty. The second question addresses what these ecosystem services and the potential damage are worth. Answering this question requires a multidisciplinary approach (economy, politics, ethics...). It is challenged by the fact that many natural environmental goods and services are not subject to market transactions and by the inherent subjectivity of valuation. A third, overarching question thus becomes to investigate how in fact we gather and evaluate the information for both former parts. Answering this question shows how often hidden, underlying limitations and assumptions are reflected in the methods environmental risk assessment and radiation protection apply.

Following the challenges just described, it may be clear that Environmental Valuation (EV), placing monetary values on environmental goods and services to evaluate changes in environmental quality, is all but an easy endeavour. However, as we will argue, a major advantage of the methodology of EV lies in the fact that helps to lay out both the importance as well as the complexity of combining exact and social sciences, and helps to pinpoint areas in radioecology where further research is needed. General radiation protection states that decision making on doses to the environment should be subject to optimisation based on ALARA, *economic and social factors being taken into account* and provided that the *costs* from further reductions of emissions would *not be disproportionate* compared to the resulting benefits. This poster aims to reflect how the theory of EV can help to substantiate this guideline and its concepts of 'optimisation', 'reasonability' and 'proportionality'. We argue that EV can be described as a tool that aims to make decision making more inclusive (by trying to internalize all values, notably externalities) and more transparent (by trying to objectify diverging and/or subjective values by means of a common (monetary) scale). It can thus substantiate both environmental as well as corporate policies on grounds of intrinsic as well as utility values. In doing so it encourages a similar evolution for environmental radiation protection as the one that can be found in contemporary human radiation protection: to

move beyond the level of thresholds of no effect towards an inclusive exercise of justification, including as many different criteria and respective values in decision making and translating them into a common scale for comparison between different policy options.

